

CLAIMS

1. A device comprising:
  - 2 a communication module configured to communicate with a base station in a wireless communication system;
  - 4 an acoustic echo canceller configured to detect and cancel an acoustic echo generated during a communication between said device and said base station;
  - 6 station;
    - 8 a network echo suppressor receiving an input from said acoustic echo canceller, said network echo suppressor attenuating a network echo generated during said communication between said device and said base station.
2. The device of claim 1 wherein said communication module is an AMPS communication module in a dual-mode handset providing AMPS and CDMA services.
3. The device of claim 1 wherein said acoustic echo canceller operates in at least two distinct modes of operation.
  - 2 The device of claim 3 where said modes of operation include a hands free mode.
5. The device of claim 3 where said modes of operation include a

2 handset mode.

6. The device of claim 3 where said modes of operation include a  
2 headset mode.

7. The device of claim 1 wherein said input from said acoustic echo  
2 canceller includes a muting parameter.

8. The device of claim 3 wherein said input from said acoustic echo  
2 canceller includes a mode of operation parameter.

9. The device of claim 1 wherein said network echo suppressor  
2 includes a state machine.

10. The device of claim 1 wherein said network echo suppressor  
2 includes a gain module.

11. A method comprising steps of:  
2 coupling a plurality of acoustic echo canceller parameters from an  
acoustic echo canceller to a network echo suppressor;  
4 determining a voice activity parameter;  
computing a coherence estimate of a transmit signal sample and a receive  
6 signal sample to detect a network echo;

providing said voice activity parameter and said coherence estimate to  
8 said network echo suppressor;  
attenuating said network echo with said network echo suppressor.

12. The method of claim 11 wherein said coupling step comprises  
2 setting said plurality of said acoustic echo canceller parameters, and said network  
echo suppressor reading said plurality of said acoustic echo canceller parameters.

13. The method of claim 11 wherein said determining step comprises  
2 using vocoder frame rate determination.

14. The method of claim 11 wherein said computing step comprises  
2 computing a coherence estimate on a block of samples, wherein said block of  
samples comprises said transmit signal samples and said receive signal samples.

15. The method of claim 14 wherein said block of samples comprises  
2 128 samples wherein 64 samples of said 128 samples are new samples.

16. The method of claim 11 wherein said providing step comprises  
2 setting said voice activity parameter and said coherence estimate and said  
network echo suppressor reading said voice activity parameter and said  
4 coherence estimate.

17. The method of claim 11 wherein said providing step comprises  
2 providing said voice activity parameter and said coherence estimate to a state  
machine.

18. The method of claim 11 wherein said attenuating step comprises  
2 executing a state machine.

19. The method of claim 11 wherein said attenuating step comprises  
2 setting a receive gain parameter.

20. The method of claim 11 wherein said attenuating step comprises  
2 using a gain module to attenuate a receive signal, said gain module attenuating  
said receive signal according to a value of a receive gain parameter.

21. A method for communicating between a base station and a mobile  
2 station, said method comprising steps of:

determining a voice activity parameter of said communication;  
4 computing a coherence estimate of a transmit signal sample of said  
communication and a receive signal sample of said communication to detect a  
6 network echo;

ascertaining a plurality of acoustic echo canceller parameters from an  
8 acoustic echo canceller;

providing said voice activity parameter, said coherence estimate, and said

- 10 plurality of acoustic echo canceller parameters to a network echo suppressor;  
attenuating said network echo with said network echo suppressor.

22. The method of claim 21 wherein said network echo suppressor is  
2 used in a dual-mode handset providing AMPS and CDMA services.

23. The method of claim 21 wherein said determining step comprises  
2 using vocoder frame rate determination.

24. The method of claim 21 wherein said computing step comprises  
2 computing a coherence estimate on a block of samples, wherein said block of  
samples comprises said transmit signal samples and said receive signal samples.

25. The method of claim 24 wherein said block of samples comprises  
2 128 samples wherein 64 samples of said 128 samples are new samples.

26. The method of claim 21 wherein said ascertaining step comprises  
2 setting said plurality of said acoustic echo canceller parameters, and said network  
echo suppressor reading said plurality of said acoustic echo canceller parameters.

27. The method of claim 26 wherein said plurality of said acoustic echo  
2 canceller parameters includes a muting parameter and a mode of operation  
parameter.

28. The method of claim 21 wherein said providing step comprises
- 2 providing said voice activity parameter and said coherence estimate and said plurality of acoustic echo canceller parameters to a state machine.

29. The method of claim 21 wherein said attenuating step comprises
- 2 executing a state machine.

30. The method of claim 21 wherein said attenuating step comprises
- 2 executing a state machine, said state machine setting a receive gain parameter, and using a gain module to attenuate a receive signal, said gain module
- 4 attenuating said receive signal according to said receive gain parameter.